
Transfer of *Arabidopsis gamosepala* and *Torularia brachycarpa* to *Braya* (Brassicaceae)

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ABSTRACT. The new combinations *Braya gamosepala* and *B. brachycarpa* (Brassicaceae) are proposed. The distinguishing characters, especially of habit and fruit and trichome morphology, separating *Arabidopsis*, *Braya*, and *Neotorularia* (formerly *Torularia*) are discussed.

Key words: *Arabidopsis*, Brassicaceae, *Braya*, *Neotorularia*.

Arabidopsis gamosepala Hedge (Brassicaceae), which is endemic to Afghanistan (Hedge, 1968), was transferred to *Neotorularia* Hedge & J. Léonard by Al-Shehbaz and O’Kane (1997) and has been maintained in that genus to the present. It was excluded from *Arabidopsis* Heynhold by these authors because it has pubescent, torulose fruits, and dendritically branched trichomes. As delimited by O’Kane and Al-Shehbaz (1997), Al-Shehbaz et al. (1999), and Al-Shehbaz and O’Kane (2002), *Arabidopsis* has glabrous, non-torulose fruits and a mixture of simple, forked, or rarely stellate stalked trichomes.

Torularia brachycarpa Vassilczenko, originally collected only from Tajikistan (Vassilczenko, 1939), is now documented as widespread in four provinces in China (Zhou et al., 2001). It was transferred to *Neotorularia* (Léonard, 1986) because *Torularia* (Cosson) O. E. Schulz is an illegitimate later homonym of the red algae *Torularia* Bonnemaison.

Recent phylogenetic studies, based on ITS sequences of nuclear ribosomal DNA and *trnL* intron of chloroplast DNA (Warwick et al., 2004), on *Braya* Sterenberg & Hoppe and *Neotorularia* clearly showed that *Arabidopsis gamosepala*, *Neotorularia brachycarpa* (Vassilczenko) Hedge & Léonard, and *B. humilis* (C. A. Meyer) B. L. Robinson (*N. humilis* (C. A. Meyer) Hedge & Léonard) are well nested within *Braya* and are most closely related to species of this genus with linear fruits, including *B. alpina* Sterenberg & Hoppe, the type species of

Braya. These four species differ from all members of *Neotorularia*, including the generic type *N. torulosa* (Desfontaines) Hedge & Léonard, by being perennials with a well-defined basal rosette (instead of annuals with no basal rosette) and by having at least basally bracteate instead of ebracteate racemes. On the basis of molecular and morphological data, *Arabidopsis gamosepala* and *Neotorularia brachycarpa* are best accommodated in *Braya*, and their transfer to this genus is herein effected.

Braya brachycarpa (Vassilczenko) Al-Shehbaz & Warwick, comb. nov. Basionym: *Torularia brachycarpa* Vassilczenko, in Komarov, Fl. URSS 8: 635. 1939. TYPE: Tajikistan. Pamir: near Ak-baital, confluence of Murgab, ca. 3900 m, 7 July 1901, *M. I. Alexeenko* 2391 (holotype, LE).

Braya brachycarpa is easily distinguished from the remaining species of *Braya* by having racemes bracteate throughout or rarely only along the lowermost part, oblong to linear fruits widest basally and 3–10(–15) mm long, and seeds sub-biseriate only at the basal portion of the fruit.

Braya gamosepala (Hedge) Al-Shehbaz & Warwick, comb. nov. Basionym: *Arabidopsis gamosepala* Hedge, in K. H. Rechinger, Flora Iranica 57: 334. 1968. TYPE: Afghanistan. Munjan: above Anjuman valley, near Anjuman, 3100 m, 14 Aug. 1965, *D. Podlech* 12379 (holotype, M; isotypes, E, M).

The occurrence of gamosepaly, although rather rare in the Brassicaceae (e.g., *Brayopsis gamosepala* Al-Shehbaz, *Desideria mirabilis* Pampanini, *Sisymbrium gamosepalum* Hedge), is not considered to be a useful character at the generic rank (Al-Shehbaz, 2001), but readily distinguishes *B.*

gamosepala from the remaining species of the genus.

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